Science-based Monitoring of Habitat Restoration Efforts

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28 July 2004

Estuary Restoration Act Standard Monitoring Protocol

- Standard data formats, requirements for types of data and monitoring frequency
- *Volume 1: A Framework for Monitoring Plans* completed 2003; available on-line
- Volume 2 to contain habitat-specific info; expected release by fall 2004
- Minimum monitoring standards adopted by the Council for all ERA projects

Estuary Restoration Act Standard Monitoring Protocol

- Methods for evaluating results must be established that directly relate to the goals for the project
- Construction or pre-design monitoring must occur
- Monitoring must be conducted in a timely fashion
- Restoration projects must include provisions or contingency plans for adaptive management
- Monitoring results, both positive and negative, must be made available to others designing or managing restoration projects

Science-based Monitoring

Capability of Determining Effect of Restoration Efforts (how successful?)

For each project prior to implementation:

1. Goal Statement (large-scale, idealistic, long-term)

   The project will result in the control of Spartina patens.
   The project will result in the re-establishment of fish passage.
   The project will result in the re-establishment of a native mangrove forest.
   The project will result in the enhancement of existing SAV beds.
   The project will result in the increase in areal extent of existing native salt marsh.
   The project will result in the increase in abundance of spawning redds.
   The project will result in the decrease in shoreline erosion.
   The project will result is the minimization of road-related delivery of coarse/fine sediment inputs to anadromous spawning and rearing habitat.

Science-based Monitoring

- Must include at least one *structural* parameter
- Must include the addition of at least one *functional* parameter after construction

- Must continue to be monitored until results indicate a trend regarding the project's success at meeting stated goals

Science-based Monitoring

Capability of Determining Effect of Restoration Efforts (how successful?)

For each project prior to implementation:

2. Structural & Functional Objective Statements
   - Action (e.g., remove, reduce, improve)
   - Parameter Targets (e.g., 20% cover, 3:7 pool/riffle)
   - Timing (e.g., by 2005)

[structural] Eliminate at least 50% of *Spartina patens* in the main infestation area by 2007.

[functional] Restore natural recruitment of native mangrove species on at least 75% of the project area by 2007.

Science-based Monitoring

May represent conditions:

- at a reference site
- target conditions considering surrounding land use or other factors

Must be:

- directly linked to the goals established for the project
- determined early in the restoration process and in conjunction with project planning and design

Science-based Monitoring

Capability of Determining Effect of Restoration Efforts (how successful?)

For each project prior to implementation:

3. Reference Values for each Parameter
4. Baseline Information for each Parameter

Science-based Monitoring

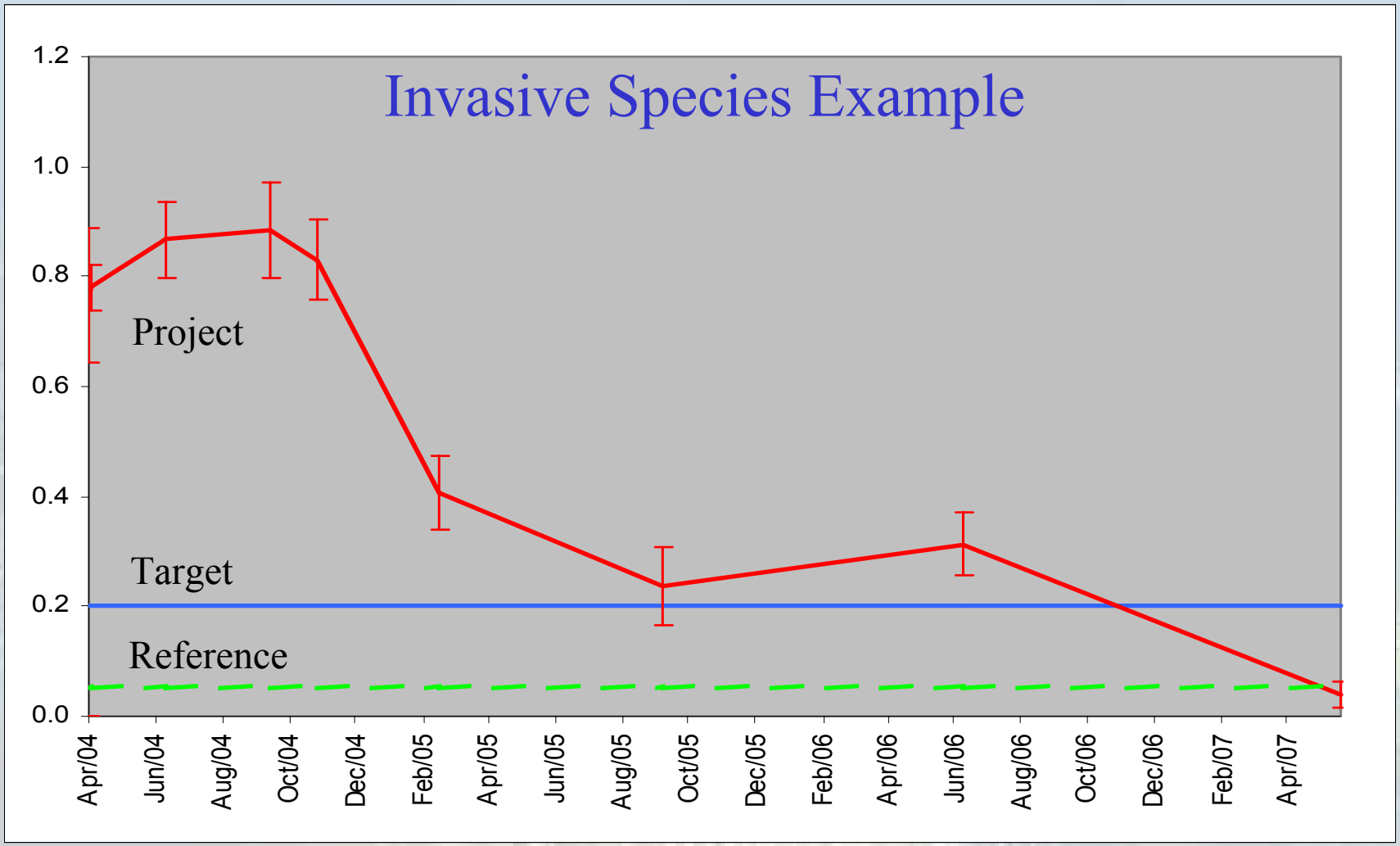
Capability of Determining Effect of Restoration Efforts (how successful?)

For each project following construction:

- Measurement of Parameters
  - Long enough to meet intent of objective
  - Minimum of one sampling date

- Met Target? …Met Reference?

Science-based Monitoring



Science-based Monitoring

Use of Monitoring Results

Reporting of Effectiveness

Priority Setting

Habitat Restoration Research to Increase Restoration Effectiveness/Success

- Aimed at improving techniques
- Aimed at improving methods
- Aimed at improving understanding of habitat relationships (e.g., trophic, biochemical, physical)